Claims

1.   A DMA controller comprising :

a DMA datapath for transferring data from a DMA source to a DMA destination; and

channel control logic for controlling transfer of data through the DMA datapath in response to parameters contained in at least one DMA descriptor having a programmable format.

2.   A DMA controller as defined in claim 1, wherein the DMA descriptor has a programmable size.

3.   A DMA controller as defined in claim 1, wherein the DMA descriptor has a programmable operating mode.

4.   A DMA controller as defined in claim 1, wherein the DMA descriptor includes a next descriptor pointer that points to a next descriptor in a descriptor list.

5.   A DMA controller as defined in claim 1, wherein the DMA descriptor includes a next descriptor size that defines a size of a next descriptor in a descriptor list.

6.   A DMA controller as defined in claim 1, wherein a size of a first DMA descriptor is defined by a register value.

7.   A DMA controller as defined in claim 1, wherein a size of the DMA descriptor is defined by a previous descriptor.

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8.   A DMA controller as defined in claim 1, wherein the DMA descriptor includes a flow mode that defines a next operation.

5   9.   A DMA controller as defined in claim 8, wherein the flow mode is selected from a stop mode, an autobuffer mode, a descriptor array mode, a small descriptor list mode and a large descriptor list mode.

10.   A DMA controller as defined in claim 5, wherein the channel control
10   logic is configured to fetch elements of a next descriptor in response to the next descriptor size.

11.   A DMA controller as defined in claim 10, wherein the channel control logic is configured to decrement a descriptor element count from the
15   next descriptor size during fetching of descriptor elements.

12.   A DMA controller as defined in claim 1, wherein the channel control logic is configured to fetch programmable descriptors in a list of descriptors.

20   13.   A DMA controller as defined in claim 12, wherein the descriptors in the list of descriptors have different formats.

14.   A DMA controller as defined in claim 12, wherein the descriptors in the list of descriptors have different sizes.

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15.   A method for DMA transfer, comprising:
      providing a DMA datapath for transferring data from a DMA source to a DMA destination; and
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controlling transfer of data through the DMA datapath in response to parameters contained in at least one descriptor having a programmable format.

5   16.   A method as defined in claim 15, further comprising fetching a next descriptor based on information contained in a current descriptor.